



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
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CHICAGO, IL 60604-3590

DEC 17 2014

REPLY TO THE ATTENTION OF:

E-19J

Andrea Martin  
Federal Rail Administration  
1200 New Jersey Avenue S.E.  
Mail Stop 20  
Washington, District of Columbia 20590

**RE: Tier One Draft Environmental Impact Statement: Chicago to Detroit/Pontiac  
Passenger Rail Corridor Program (CEQ #20140266)**

Dear Ms. Martin:

The U.S. Environmental Protection Agency has reviewed the Tier One Draft Environmental Impact Statement (Draft EIS) for the Chicago to Detroit/Pontiac Passenger Rail Corridor Program (Program) located in portions of Cook County in Illinois; Lake, Porter, and LaPorte Counties in Indiana; and Berrien, Van Buren, Cass, Kalamazoo, Calhoun, Jackson, Washtenaw, Wayne, and Oakland Counties in Michigan. This letter provides our comments pursuant to the National Environmental Policy Act (NEPA), NEPA Implementing Regulations (40 CFR 1500-1508), and Section 309 of the Clean Air Act.

The Departments of Transportation (DOT) for Michigan, Indiana, and Illinois (the Program Sponsors), together with the Federal Railroad Administration (FRA), have initiated the Program to evaluate intercity passenger rail for a corridor between Chicago and Detroit/Pontiac, Michigan (the Corridor). Intercity passenger rail service in the Corridor currently includes three daily round trips between Chicago and Detroit/Pontiac, Michigan, along the current alignment through Amtrak's Wolverine service. The maximum train speed on most of the Corridor is 79 miles per hour (mph), except for the 97-mile section between Kalamazoo, Michigan, and Porter, Indiana, where passenger trains operate at speeds up to 110 mph. Currently, Wolverine trains take approximately 5 hours and 38 minutes to travel between Chicago and Detroit, with approximately one additional hour of travel time from Detroit to Pontiac, Michigan; average travel speeds are 47 mph.

The Program's purpose (as stated in the Draft EIS) is to enhance intercity mobility along the Corridor from Chicago to Detroit/Pontiac, Michigan by providing an improved passenger rail service that will be a competitive transportation alternative to automobile, bus and air service by

2035. The need for the Program arises from the inadequacy of existing passenger rail service and other modes of transportation to meet current and future mobility needs within the Corridor. The 29-mile stretch of Norfolk Southern Railway's Chicago Line between the Illinois/Indiana state line and Porter, Indiana is the single most delay-prone intercity passenger rail corridor in the country. Increasing both train speeds and rail capacity (via construction of new passenger track(s), new freight track(s), sidings, and other improvements, which vary by alternative), is anticipated to reduce rail travel time between Chicago and Detroit by nearly two hours.

A No-Build Alternative and six preliminary route alternatives were carried forward for analysis in the Tier One Draft EIS. Some routes were combined, resulting in four Build Alternatives: Route 2, Route 4, Route 5 (Options 1 and 2) and Route 9 (Options 1 and 2). Each build alternative assumes travel speeds of 110 mph and an end total of 10 daily round trips (DRTs) between Chicago and Detroit, with seven DRTs continuing to Pontiac. The only differences among the route alternatives are within the South of the Lake (SOTL) area between Chicago and Michigan City, Indiana. The Tier One Draft EIS designated a 500-foot wide planning corridor for all Build Alternatives. A reduced-width construction and staging alignment will be further refined as the NEPA process progresses.

Based on our analysis, EPA has rated the Tier One Draft EIS as “**Environmental Objections – Insufficient Information**” (EO-2). Please see the enclosed “Summary of Rating Definitions” for an explanation of this rating. EPA's comments on the Tier One Draft EIS focus on the quality of information provided in the Draft EIS, purpose and need and alternatives development, Section 4(f) and 6(f) resources, wetland and aquatic resource impacts, environmental justice, and impacts to threatened/endangered species, high quality habitat, air quality, noise and vibration, and public health concerns. Chapter 1 of the Tier One Draft EIS recognizes that service frequency in the Corridor is limited to three round trips per day not just because of capacity constraints on the existing route, but also due to the associated environmental issues/impacts to the Indiana Dunes National Lakeshore (INDU), historic properties, wetlands, and noise and air quality that would result if service frequencies increase. EPA agrees that such impacts need further analysis, and has serious concerns in particular with the potential for increased impacts from routes proposing acquisition of lands from the National Park Service (NPS) in the INDU as well as the potential for significant impacts to globally-rare dune and swale wetland systems – including existing state Nature Preserves, areas in the process of being state-dedicated as a Nature Preserve, and existing wetland mitigation sites. Our comments are discussed in greater detail in the enclosure to this letter: “*EPA Detailed Comments on the Tier One Draft EIS for the Chicago to Detroit/Pontiac Passenger Rail Corridor Project.*”

Given the extent of EPA's comments, EPA strongly encourages FRA to undertake appreciably more detailed analysis that would be subject to public and agency review prior to making any decisions regarding the project. Given the importance of this project, it is vital that the reviewing agencies, decision makers, and the public, be provided with adequate detail to evaluate the proposed project alternatives. In any case, EPA would like to work with FRA and the Project Sponsors to resolve our concerns on the Tier One Draft EIS as the project design is refined for further review, and before environmental permitting begins. To address the environmental concerns and land acquisition implications of the Build Alternatives in the SOTL area, EPA also suggests future meetings that include EPA, FRA, and the Project Sponsors as well as the NPS,

the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, the Indiana Department of Natural Resources, and the Indiana Department of Environmental Management.

EPA appreciates the opportunity to review and comment on the Tier One Draft EIS. We look forward to meeting with you soon to discuss our comments. If you have any questions regarding these comments, please contact Ms. Liz Pelloso, PWS, of my staff at 312-886-7425 or via email at [pelloso.elizabeth@epa.gov](mailto:pelloso.elizabeth@epa.gov).

Sincerely,



Alan Walts  
Director, Office of Enforcement and Compliance Assurance

Enclosures:

- *Summary of Rating Definitions*
- *EPA Detailed Comments on the Tier One Draft EIS for the Chicago to Detroit/Pontiac High Speed Rail Project*
- *Indiana Waters Designated for Special Protection*
- *Indiana Critical Wetlands and Critical Special Aquatic Sites*

cc (via email):

Mark Loomis, USEPA R5-GNLPO  
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Elliot Ramos, IDOT  
Karen Miller, IL DNR  
David Halpin, IL SHPO  
Kris Krouse, Shirley Heinze Land Trust  
Katie Mulchan, Lake County Parks and Rec  
Arnold Randall, Forest Preserve District of Cook County



# **SUMMARY OF RATING DEFINITIONS AND FOLLOW UP ACTION<sup>1</sup>**

## **Environmental Impact of the Action**

### **LO - Lack of Objections**

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

### **EC - Environmental Concerns**

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impacts. EPA would like to work with the lead agency to reduce these impacts.

### **EO - Environmental Objections**

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

### **EU - Environmentally Unsatisfactory**

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

## **Adequacy of the Impact Statement**

### **Category 1 - Adequate**

The EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collecting is necessary, but the reviewer may suggest the addition of clarifying language or information.

### **Category 2 - Insufficient Information**

The draft EIS does not contain sufficient information for the EPA to fully assess the environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

### **Category 3 - Inadequate**

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

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<sup>1</sup> From EPA Manual 1640: Policy and Procedures for the Review of Federal Actions Impacting the Environment



# ***EPA Detailed Comments on the Tier One Draft EIS for the Chicago to Detroit/Pontiac Passenger Rail Corridor Project***

***December 17, 2014***

## **INSUFFICIENT INFORMATION**

Guidance on contents of an EIS is provided in Section 14 of FRA's Procedures for Considering Environmental Impacts<sup>1</sup>. In general, the Draft EIS provided very little factual or substantive information, and relied on non-specific and inappropriate data sources that were sometimes out-of-date. Additionally, it does not appear that the Draft EIS included all information specified in FRA's Procedures for Considering Environmental Impacts.

EPA understands that some of this information is not yet known at the stage of a Tier One EIS document; however, EPA is concerned that selection of a Tier 1 preferred alternative corridor will be based on incorrect and incomplete information. The purpose of a Tier 1 document is to identify and study the "big picture" issues of identified alternatives in order to select a preferred alternative for detailed study in Tier 2. This relies upon proper data and documentation during the Tier 1 study, and more specific review should not be deferred to the Tier 2 document, after a corridor has been selected.

Examples of significant inaccuracies or missing information in the Draft EIS are listed below. Given a lack of specific information in the Draft EIS, at this time EPA cannot fully determine the extent to which additional information is required.

- Route descriptions are misleading or inaccurate. For instance, wrong geographic descriptors are used (Chapter 3 page 104: "...then west to the Indiana border"), structure references/names are used interchangeably (use of either the Englewood flyover or crossover to refer to the same structure), and descriptions of routes change between Chapter 2 and Chapter 3. Additional comments pertaining to alternatives are found in later comment subsections.
- Resource data used is inaccurate or inappropriate. Examples: county-level data should not be utilized to determine areas of environmental justice concerns, and several stream names used

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<sup>1</sup> Relevant portions of this document include: "*The environmental consideration process should seek to quantify each impact identified as relevant to the proposed action and to each alternative. Such quantification should properly develop, over the course of the environmental impact process, from a rough order-of-magnitude estimate of impact to finer and more precise measurements. The depth of analysis of each impact should be guided by the following factors: (1) The likely significance of the impact; (2) The magnitude of the proposed action or an alternative action; (3) Whether the impact is beneficial or adverse; and (4) Whether and to what extent the impact has been assessed in a prior environmental document. The discussion under each area of impact should cover the proposed action and all alternatives, even if only to point out that one or more alternatives would have no impact of that kind. Under each area of impact, the discussion should focus on alternatives which might enhance environmental quality or avoid some or all adverse impacts of the proposed action. Attachment 2 to DOT Order 5610.1C provides guidance on the contents of this section. Analysis should be focused on areas of significant impact: beneficial and adverse; direct, indirect, and cumulative; and both long and short-term. There should be evidence of consultation with appropriate Federal, State and local officials.*"

in the document do not match stream names from U.S. Geological Survey (USGS) topographic maps.

- Resource impact descriptions are inaccurate. For example, page ES-30 of the Executive Summary states, *“The construction activities of the Build Alternatives including tree and brush clearing, placement of fill material for additional track and sidings, stream relocations, culvert replacement or extensions, and bridge replacement or additions...”* This statement, with which EPA concurs, contradicts parts of the Draft EIS that state no impact to wetlands, streams, or waterbodies is expected. Impacts to wetlands and streams are expected to result from any of the build routes, due to the activities described above. Additional comments are below in the subsections pertaining to wetlands and water resources.
- Resource impact assertions are dismissive of the potential for impacts, without providing supporting analysis. For example, page 256 of Chapter 3 states, *“Given that the majority of construction impacts of the Build Alternatives would be within existing right of way and that nearly the entire additional right of way required is adjacent to existing right of way, the physical impacts would be localized. Any new impacts outside of the existing track’s footprint and right of way would be relatively narrow, linear, and distributed over a long distance (approximately 300 miles). As a result, the impacts to any given resource (e.g., natural, cultural, agricultural, or socioeconomic) within any given area (e.g., ecosystem, watershed, community) is expected to be relatively small and would have a negligible contribution to cumulative effect when considered with impacts from other projects in those areas.”*
- Other information provided was factually inaccurate. As an example, the Draft EIS on page 257 of Chapter 3 inaccurately states that the U.S. Army Corps of Engineers (USACE) Chicago District regulates the Indiana portion of the project except south of Interstate 80/90 in Porter County, and that the USACE Detroit District regulates the area south of I-80/90 in Porter County, Indiana. Chicago District USACE regulates all of Lake and Porter County, Indiana, as well as the portion of LaPorte County, Indiana within the Little Calumet-Galien watershed basin (generally north of Interstate I-80/90).
- Maps provided are inaccurate and inadequate. The Draft EIS does not include resource-specific maps; the only maps of resources are located in Appendix D. They are coarsely scaled, do not include match lines, and do not provide adequate detail on resources. Further, several resource categories are lumped into a single map (schools, historic properties, floodplains, streams etc.). This would be more appropriate if the map scale were smaller, but is difficult to discern and read at the level of scale provided. As a specific example, Appendix D maps did not include all Federally-owned lands within the Indiana Dunes National Lakeshore (INDU). Maps should be located throughout the actual EIS document, within the sections pertaining to specific resource categories.
- Reference to several applicable Executive Orders (including, but not limited to, EO 11988, 11990, and 12898) were made throughout Chapter 3; however, the Draft EIS did not discuss how the project would comply with each Executive Order.
- The Draft EIS does not clearly describe how build alternatives would be in compliance with Section 4(f) of the Department of Transportation Act and Section 6(f) of the Land and Water Conservation Fund Act, as further discussed in the comment subsection on 4(f) and 6(f) properties. Page ES-22 of the Executive Summary, in the Section 4(f) Resources section, fails to explicitly mention specific 4(f) usages associated with each proposed route. The Indiana summary of impacts does not mention the most serious proposed impacts (impacts to the INDU for Routes 2, 4, and presumably 5). It also does not clearly provide quantified

(acreage) impacts. It is not clear to reviewers which routes propose direct impacts (right of way/land acquisition and/or other Section 4(f) or 6(f) impacts) to the INDU. Conflicting information regarding acquisition of right of way land from the INDU is provided throughout the document. Specifically, page ES-22 of the Executive Summary, in the Section 4(f) Resources section for Indiana Route 9 Option 1 and 2, states, “*Option 9 is the only alternative that avoids the need to acquire lands from the Indiana Dunes National Lakeshore.*” Page ES-24 of the Executive Summary, in the Section 6(f) Resources section for Indiana states, “*For both Route 5 Options and both Route 9 Options: The Indiana Dunes National Lakeshore lies just north of the Route 5 and 9 options for about two miles. It is expected that no right of way acquisition from the National Lakeshore would be required. The wooded southeast corner of Woodland Park in Porter County, Indiana touches the route tracks at the Willow Creek Road crossing. Any necessary crossing improvements at this location could possibly require acquisition of right of way. This would need to be further analyzed in final design.*” Page 183 of Chapter 3 states, “*Route 9, like Route 5 avoids potential land acquisition from the Indiana Dunes National Lakeshore.*” Additionally, it is not clear if that crossing improvements proposed at Willow Creek Road (page ES-24) reference the possibility of right of way acquisition within INDU, or outside of INDU.

**Recommendation:** EPA would like to work with FRA and the Project Sponsors to make sure that sufficiently complete and accurate information is included to meet the purposes of a Tier 1 review.

## **PURPOSE AND NEED**

1. Project needs specified on page ES-2 of the Executive Summary are different from project needs specified in Section 1.3 of Chapter 1.

**Recommendation:** Ensure project needs are consistently stated.

2. The project’s purpose, from Chapter 1 (page 4), is to “*enhance intercity mobility along the Corridor from Chicago to Detroit/Pontiac, Michigan by providing an improved passenger rail service that would be a competitive transportation alternative to automobile, bus and air service.*” One of the project’s objectives is to “*Establish a higher-speed double track passenger rail route between Chicago Union Station and Porter, Indiana that provides opportunities to enhance strategic future connections to other Midwestern rail markets as defined within the Midwest Regional Rail Initiative (MWRRI), including those federally designated Chicago to Detroit, Chicago to Cleveland and Chicago to Indianapolis intercity rail corridors.*” The Draft EIS is not clear on specific locations of proposed new “double track”, and in some cases, references construction of more than one new passenger rail line; Route 2<sup>2</sup> references two new tracks; Route 4 references two new tracks and a future freight rail; Route 4<sup>3</sup> mentions several locations of new multiple tracks; Route 5 Option 1<sup>4</sup>

<sup>2</sup> Route 2 descriptions in Chapter 1 (page 95) discuss providing two new dedicated passenger tracks “*from the Englewood Flyover through Buffington Harbor to Porter, Indiana.*”

<sup>3</sup> Route 4 descriptions in Chapter 1 (page 96) discuss providing “*construction of two new tracks and one future freight track*” and “*a new track in the NICTD corridor between Miller and Burns Harbor, Indiana.*”

<sup>4</sup> Route 5 Option 1 descriptions in Chapter 1 (page 96) discuss providing “*two new dedicated passenger tracks and also accommodating up to two future freight tracks for future growth.*”

references two new passenger tracks and future freight tracks; Route 9 Option 1 references two new passenger tracks and a future freight track.<sup>5</sup> The Draft EIS is unclear if multiple tracks are proposed for Route 5 Option 2 and Route 9 Option 2.

**Recommendation:** The Draft EIS was unclear in asserting that new parallel passenger rail tracks are only proposed to be built between Chicago and Porter, Indiana. This should be made much clearer. Maps showing detailed, clear locations of all proposed track changes, including proposed sidings, proposed new passenger and proposed new freight rail center lines, should be included. Any passenger track enhancements in the portion of the corridor between Porter, Indiana and Detroit/Pontiac should also be clearly explained and mapped.

3. Chapter 2 (p 23) states, *“Under the full build-out, the Build Alternatives in the south of the lake area (SOTL) are envisioned to have capacity to accommodate up to 56 Midwest corridor trains with service to Cleveland, Indianapolis, and Cincinnati in addition to the Michigan services as well as six Amtrak long distance trains. Constructing a dedicated double track alignment in the SOTL is a vital infrastructure goal to meet the Program’s purpose and need and to accommodate 56 Midwest corridor trains on a common SOTL passenger alignment. The proposed MWRRS [Midwest Regional Rail System] Plan indicates that services to Cleveland, Indianapolis, and Cincinnati would join the proposed Chicago-Detroit/Pontiac route in northwest Indiana.”* Because the SOTL path is currently single-track passenger rail, a bottleneck exists, causing major delays. The extent of these delays is not properly described in the purpose and need chapter or in other parts of the Draft EIS. The purpose and need chapter does not mention the need to accommodate up to 56 midwest corridor trains for regional service. The Draft EIS also does not discuss average length of delay or how delays have worsened or changed in the SOTL area. Without this information, the nationwide importance of the Corridor is not fully described nor understood, undermining the project’s purpose and need.

**Recommendation:** FRA should indicate the nationwide importance of the Corridor, particularly in discussions regarding the SOTL section. Currently, the Draft EIS adequately describes the importance of moving people between Chicago and Detroit, but any relation to moving people outside of the region and throughout the Midwest (as per the MWRRS) is overlooked.

4. The Draft EIS mentions construction of future freight rail tracks in multiple Route alternatives. There was no discussion on why future freight tracks are necessary and how their inclusion relates to the project purpose and need.

**Recommendation:** Discuss the relation of future freight rail as proposed (in each specific build alternative), why it is necessary, and how it relates to project purpose and need.

5. Page 60 (Chapter 2 - Section 2.4.1.1) states, *“the existing service does not provide the desired frequencies along the length of the Corridor to make intercity passenger rail service*

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<sup>5</sup> Route 9 Option 1 descriptions in Chapter 1 (page 98) discuss providing two new tracks for specific lengths and also a future freight track in an additional location.

*a preferred mode of choice for many living and working within the Corridor.”* However, the Draft EIS did not discuss how upgraded service would benefit those living and working within the corridor. The document was also not clear on whether or not upgraded service is intended to serve as a commuter rail service for those who work within the corridor.

**Recommendation:** Discuss if upgraded service is intended to serve as a commuter rail service for those who work within the corridor, or how it is intended to make “intercity passenger rail service a preferred mode of choice for many living and working within the Corridor.”

6. The discussion of load factor<sup>6</sup> is confusing and does not provide an adequate understanding of this industry term. EPA understands “load factor” to be the number of standard class passengers on a service expressed as a percentage of the maximum-stated standard class passenger capacity for that service. For example, a train that has the same passenger load as the passenger capacity has a load factor of 100 percent. The document indicates that a threshold of 75% requires system and infrastructure updates. The Draft EIS does not indicate why there are not enough seats for tickets sold. The Draft EIS also indicates that *without a reservation system*, the load factor is exceeded; this implies that another alternative (a reservation system) would partially meet the purpose and need.

**Recommendations:** Clarify the following points:

- Whether the alternatives analysis rely on this metric (as in, an alternative has been dismissed/carried forward because it does not change the load factor).
- Whether the appropriate load factor be achieved if a reservation system were in place, as indicated by the Draft EIS. Why is there no reservation system in place? A reservation system would, therefore, partially meet the purpose and need.
- The document should include the calculation to derive the load factor. This should be explained in plain language
- What guidance states that a load factor over 75% is a threshold for infrastructure or system improvements?

## **ALTERNATIVES**

1. Chapter 2 and Chapter 3 have different route descriptions for Route 2. Per Chapter 3, *“between Chicago Union Station and the Englewood Flyover in Chicago (see Figure 2-13, Map Node A - S), a new parallel track would need to be installed to provide a dedicated double-track passenger route in this area.”*<sup>7</sup> Per the description found in Section 2.4.2.2, there is no mention of the new parallel track, only refurbishments to the existing track. Further, Section 3.2.4.2 does not mention refurbishments to the 21<sup>st</sup> Street Bridge over the South Branch of the Chicago River, which would likely have impacts to both street and water-based modes of transportation.

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<sup>6</sup> The Draft EIS refers to this as “loading factor”.

<sup>7</sup> Page 94

**Recommendation:** Include corrected route descriptions that are consistent throughout the document. Without these descriptions, it is impossible to determine where impacts might occur.

2. The Draft EIS stated that locations of the new station, maintenance facility, and layover area will be pushed to the Tier 2 analysis. EPA does not agree with this approach and believes location alternatives should be developed during the Tier 1 phase, with specific locations selected for the Tier 2 analysis. The Draft EIS relies on these facilities as part of the analysis without having identified or considered their impacts. For example, the environmental justice analysis included benefits to the community from the new station located in northwest Indiana. It is impossible to determine whether there will be benefits to communities with environmental justice concerns if the location of the station is not yet determined.

**Recommendation:** Include alternatives for the locations of the new station, maintenance facility, and layover area. The impacts of the new station location(s), maintenance facility locations, and layover area(s) should be analyzed, including, but not limited to, noise, vibration, and air quality. Alternative locations should factor in community input for both adverse and beneficial impacts.

#### **INDIANA DUNES NATIONAL LAKESHORE / SECTION 4(f) AND 6(f) PROPERTIES**

1. The Draft EIS lacks accurate information about the acquisition of Federal INDU property proposed with Routes 2, 4, and 5<sup>8</sup>. The Draft EIS states that expansion of the rail right of way will require purchase of NPS property. FRA should know that NPS land cannot just be acquired. In fact, it would take an act by Congress to allow NPS to sell part of the National Lakeshore. This is a fatal flaw of routes 2, 4, and 5. Per Section 4(f) of the Department of Transportation Act (DOT Act) of 1966, Federal law prohibits the use of land of significant publically owned parks, recreation areas, wildlife and waterfowl refuges, or land of a historic site for transportation projects, unless the following conditions apply: 1) there is no feasible and prudent alternative to the use of the land, and 2) the actions include all possible planning to minimize harm to the property resulting from the use. Because Route 9 is the only alternative that does not require acquisition of INDU property, it appears to be the only feasible and implementable build alternative. Selection of Routes 2, 4, or 5 does not comply with Section 4(f).

**Recommendation:** State that acquisition of Federal INDU property would require action by Congress and that outright purchase of NPS property without Congressional action is impossible. The review document should note that the only feasible alternative per Section 4(f) is Route 9.

2. Page ES-22 of the Executive Summary, in the Section 4(f) Resources section, does not identify specific 4(f) usages associated with each proposed Route. Further, the Draft EIS is missing a preliminary Section 4(f) determination as discussed in FRA's Procedures for Considering Environmental Impacts and as recommended in "The Guidelines for Use of

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<sup>8</sup> Page ES-24 states that both routes 5 and 9 avoid acquisition of land from INDU, but page ES-23 states that Route 9 is the only alternative that avoids the need to acquire lands from INDU.

Tiered Environmental Impact Statements for Transportation Projects.”<sup>9</sup> The Indiana summary of impacts omits the most serious proposed impacts (impacts to the INDU for Routes 2, 4, and 5). It also does not clearly provide quantified (acreage) impacts. As noted above, the Draft EIS was unclear on which routes propose direct impacts (right of way acquisition and/or other impacts under Section 4(f) or under Section 6(f) of the Land and Water Conservation Fund Act) to the INDU or other Federal property.

**Recommendations:** Identify the specific impacts associated with each proposed Route, and provide explicit, quantified changes in land use (acreage changes). Each Route should explicitly state whether or not impacts, right of way (ROW) acquisition, or other “use” of INDU property are proposed. This should be clarified in both the Executive Summary and other relevant sections. Preliminary Section 4(f) and 6(f) determinations should also be completed.

## **WETLAND IMPACTS**

1. Pages ES-27 and ES-28 of the Executive Summary, in the Wetlands section, quantify wetlands in the project study corridor (from National Wetland Inventory [NWI] maps) for Illinois (ranging from 7.1 acres to 62.4 acres) and Indiana (ranging from 109 acres to 224 acres). However, there was no quantification of wetlands within the project study area for Michigan. Instead, page ES-28 says, “*No wetland impacts from Program improvements are expected in Michigan.*” EPA’s review of aerial photography and the route maps in Appendix D show that many wetland areas, including NWI polygons, overlap the proposed route in Michigan. As noted in our comments in the Streams, Water Resource Impacts, and Water Quality section of this letter, enough land disturbance activities are associated with the project route in Michigan that wetland impacts appear imminent in all three states.

**Recommendation:** Update provided information and state that wetland impacts are required in all three states.

2. Section 3.17 in Chapter 3 mentions only the regulatory aspect of wetlands with no consideration of their importance (functions and values).

**Recommendations:** Provide information about why wetlands are important, including their ecosystem values (e.g. fish and wildlife habitat) and their services to society (e.g. water quality, flood attenuation and groundwater recharge). In particular, FRA documentation should recognize the uniqueness of the wetlands protected within INDU and the numerous Nature Preserves and other significant habitats that would be affected by the various Build alternatives.

3. Section 3.17 in Chapter 3 is supposed to discuss “*the presence of wetlands in the Area of Analysis and the effects the Program may have on them.*” However, no discussion of specific impacts to wetlands (location, type, acreage, etc.) is provided in this section. While GIS data was utilized to compile Table 3-31 (a summary of NWI acreage by route), the Draft EIS did

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<sup>9</sup> Study undertaken by the Transportation Research Board; available online at: [http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP25-25\(38\)\\_FR.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP25-25(38)_FR.pdf)

not to provide substantive or quantified estimates of wetland acreage impact associated with each proposed alternative. Also, because the actual area of impact would be considerably narrower than full destruction for the 500-foot study corridor, the numbers and acreages of wetlands that would be affected by any alternative would be smaller than these numbers imply. Therefore, it would be much more helpful to also list the numbers and acres of wetlands within a presumptive narrower corridor, such as 150 feet wide, in order to more closely reflect the actual wetland impacts that can be expected to occur.

**Recommendation:** FRA and its consultant team should intersect the study area width with NWI data in GIS to begin quantifying the potential wetland acreage impacts associated with each build alternative. Both a calculation for full destruction within the 500' corridor, and the results of a smaller (150' suggested) footprint should be provided. These results should be quantified in a new table. Additional maps should be created that identify each potential wetland impact, including acreage of impact, type of impact (fill, bridging, etc.), and most importantly, location of impact.

4. Table 3-31 in Chapter 3 breaks out NWI wetlands within the study corridor of each route and by option, with the exception of Route 5, which is not split into the acreages separated for Route 5 Option 1 and Route 5 Option 2. Without this information, EPA and other document reviewers are unable to determine any acreage differences between the two routes.

**Recommendation:** Revise this table and add NWI acreages for the study width of both Route 5 Option 1 and Route 5 Option 2.

5. The Draft EIS did not discuss the presence of globally-rare dune and swale wetlands within the project corridor. While EPA understands a wetland/waters delineation has not yet been undertaken, dune and swale wetland complexes are observable in wetland aerial photography throughout the Corridor; they are also known to be found in the study corridor in areas where they are already protected (as existing Nature Preserves, mitigation sites etc.) In Indiana, dune and swale is defined as a "rare and ecologically important wetland type"<sup>10</sup> and these ecosystems support the highest concentrations of State and Federally-listed threatened and endangered species found anywhere in the State of Indiana. Impacts to this dune and swale wetlands are generally considered unmitigatable. The Draft EIS did not mention the presence of dune and swale wetlands within the project corridor, and the potential for impacts to these globally-rare ecosystems. Ecologically significant areas include, but are not limited to, the following areas:
  - Dune and swale habitat in the INDU, including Miller Woods (Route 2 and Route 4)
  - Remnant dune and swale habitat owned by Canadian National (CN) including Area 8 East and areas adjacent to the CSX Barr Subdivision (Route 4)
  - Clark & Pine Nature Preserve, Clark Junction West Site, the Clark and Pine General Refractories Site, and the Pine Station Nature Preserve (Route 5 – both options)
  - Remnant dune and swale habitat in the Brunswick section of Gary, Indiana (Route 5)
  - Ivanhoe South Nature Preserve<sup>11</sup> (Route 9 – both options)

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<sup>10</sup> See Enclosure – "Indiana Critical Wetlands and Critical Special Aquatic Sites"

<sup>11</sup> Ivanhoe South is currently being restored by the USACE as a part of a Great Lakes Fishery and Ecosystem Restoration Program and is in the process of being state-dedicated as a Nature Preserve.

- Tolleston Ridges Nature Preserve (Route 9 – both options)
- Brunswick Savanna (Route 9 – both options)
- The Indiana DNR - Division of Nature Preserves (DNP) is aware of remnant dune and swale parcels located between/among the numerous railroad tracks in the vicinity of North Clark Road (in Gary, Indiana). Indiana DNR-DNP currently owns two Dedicated State Nature Preserves in the area: the Clark and Pine Nature Preserve, and the Pine Station Nature Preserve (both previously mentioned). The CN multi-year studies undertaken as part of the requirements of its purchase of the EJ&E Railroad (Surface Transportation Board Finance Docket No. 35087 and related EIS), which included vegetation, insects, amphibians and reptiles, migratory and breeding birds, and rare mammals, were confined to properties CN owns, but many of the sites share a property line with the Norfolk Southern Railroad (NSRR) Chicago Line, whose lands support the same rare dune and swale habitat. For example, the Lakeshore Railroad Prairie east of North Clark Road and north of Pine Station Nature Preserve is jointly owned by CN and NSRR, with the larger portion of this extremely valuable habitat being owned by NSRR. Another high quality area, called Clark Junction Addition #2 (also called Area 11) and located north of Clarke Junction West, also shares a property line with the NSRR. A third high quality site, Area 8 East, is located along the south side of the CSX Barr Subdivision immediately north of Pine Station. Several of the high quality sites, including the CN portion of Lakeshore Railroad Prairie and Area 8 East, will be protected in perpetuity and managed to retain their unique habitat qualities as part of the required mitigation for wetland fill associated with expansion of CN's Kirk Yard and related trackage changes<sup>12</sup>. These 2 sites will also have conservation easements to Indiana DNR-DNP to ensure they are permanently protected. The Lakeshore Railroad Prairie is adjacent to the NSRR Chicago Line and could be directly impacted by Route 2. It is also within the Area of Analysis corridor for Route 4. Area 8 East is adjacent to Route 4 and within the Area of Analysis for Route 2. Area 11, also called Clark Junction Addition 2, is not part of the mitigation package for the USACE permit but is still recognized as a valuable habitat supporting rare species. This site is adjacent to and could be affected by Route 2 and is within the Area of Analysis of Routes 4 and 5. Because of these additions in the North Clark Road area, the analyses of impacts mentioned in Section 3.12.4.2 Route 2, Section 3.12.4.3 Route 4, and Section 3.12.4.4 Route 5 need to be recalculated and reanalyzed.

**Recommendation:** Include information about the importance of dune and swale wetlands, including ecosystem services they provide, their functions and values, information on their rarity, uniqueness, landscape setting and context, etc. In particular, recognize the uniqueness of these and all wetlands protected within INDU and the numerous Nature Preserves and other significant habitats that would be affected by the various Build alternatives.

6. CN owns four parcels within or near the study area that are already in the process of being restored as required mitigation for rail yard improvement wetland impacts. These mitigation sites are permanently protected under conservation easements granted to the Indiana DNR -

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<sup>12</sup> USACE Chicago District permit LRC-2010-803-IN

Division of Nature Preserves. These areas cannot be disturbed. They include Yard A/B (impacted by Routes 2, 4, and 5), Area 8 East (impacted by Routes 2 and 4), Lakeshore Railroad Prairie (impacted by Routes 2 and 4), and USX Prairie (which presently appears to lie north of the proposed impacts).

**Recommendation:** Discuss these areas, as well as any other wetland mitigation areas, within the identified corridors of each alternative. There should also be a discussion on whether or not each proposed build alternative would impact these, or any other, mitigation sites. This should be discussed as part of the “land use” impacts as well.

7. Placement of fill materials into Waters of the U.S. will require that the project comply with the Section 404(b)(1) guidelines under the Clean Water Act. These guidelines are summarized as follows:

- **Least Environmentally Damaging Practicable Alternative (LEDPA)** – There must be no practicable alternative to the proposed discharge (impacts) which would have less adverse impacts on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences;
- **No Violation of Other Laws** – The proposed project must not cause or contribute to violation of state water quality standards or toxic effluent standards, and must not jeopardize the continued existence of federally-listed endangered or threatened species or their critical habitat(s);
- **No Significant Degradation** – The project must not cause or contribute to significant degradation of Waters of the United States; and
- **Minimization and Mitigation of Adverse Impacts** – The project must include appropriate and practicable steps to avoid impacts to regulated Waters of the United States. Where impacts are unavoidable, there must be documentation on how impacts have been minimized. Finally, compensatory mitigation to offset unavoidable, minimized impacts to the aquatic ecosystem must be provided.

**Recommendations:** An alternatives analysis for prudent and feasible alternatives should be conducted for proposed impacts to all Waters of the United States, including wetlands. Examination of alternatives should include project modifications that fulfill the stated project purpose and result in no impacts to existing Waters of the U.S., or modifications to the project that would minimize impacts to best maintain the functions, values, and habitat of the existing waters. Such alternatives should address options such as modifying the project to reduce required fill amounts, use of more environmentally-beneficial project, and project components that support and improve the existing aquatic ecosystems. Feasible and prudent alternatives should also take into consideration the costs, existing technology, logistics of the project, and requirements for mitigation under Clean Water Act Section 404(b)(1) guidelines. As the project is further developed, Tier 2 documents should include the following information:

- A robust discussion on Section 404/401 permitting, including a discussion on Section 401 Water Quality Certification requirements in each of the three states;
- A robust discussion about how sequencing established by the Clean Water Act Section 404(b)(1) guidelines has been applied, namely, avoidance first, then

demonstration of impact minimization, then mitigation for unavoidable, minimized impacts;

- Project modifications as noted above; and
- A robust discussion on any proposed mitigation, including mitigation sequencing. This should include how mitigation will comply with USACE's 2008 Mitigation Rule (33 CFR 332).

## **STREAMS, WATER RESOURCE IMPACTS, AND WATER QUALITY**

1. Page ES-26 of the Executive Summary, in the Water Body Crossings and Floodplains section, states that crossings in Indiana for Route 2 include the Grand Calumet River, Indiana Harbor Canal, Portage Burns Waterway<sup>13</sup>, East Fork of the Little Calumet River, and Trail Creek<sup>14</sup>; crossings for Route 4 include the Grand Calumet River, Indiana Harbor Canal, Portage Burns Waterway<sup>15</sup>, East Fork of the Little Calumet River, and Trail Creek; crossings for Route 5 Option 1 and Option 2 include the Grand Calumet River, Indiana Harbor Canal, Portage-Burns Waterway<sup>16</sup>, Salt Creek, Willow Creek, East Fork of the Little Calumet River, and Trail Creek; and crossings for Route 9 Option 1 and Option 2 include Portage Burns Waterway<sup>17</sup>, Salt Creek, Willow Creek, East Fork of the Little Calumet River, and Trail Creek.

EPA's review of crossings associated with Route 2<sup>18</sup>, Route 4<sup>19</sup>, Route 5 Option 1<sup>20</sup>, Route 5 Option 2<sup>21</sup>, and Route 9<sup>22</sup> (both Option 1 and Option 2) included many more crossings than were mentioned in the Draft EIS. Furthermore, page ES-26 also stated that in Michigan, *"Proposed improvements are not anticipated to impact streams, rivers, or wetlands beyond the temporary impacts during construction."*

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<sup>13</sup> This is an incorrect stream name. This waterway is known as Burns Ditch, and that is how it is labeled on U.S. Geological Survey (USGS) topographic maps.

<sup>14</sup> This information is in conflict with streams noted on page 199 of Chapter 3.

<sup>15</sup> Ibid.

<sup>16</sup> Ibid.

<sup>17</sup> Ibid.

<sup>18</sup> Route 2 Indiana crossings noted by EPA include: Calumet River, Indiana Harbor Canal, Grand Calumet River, Burns Ditch, Samuelson Ditch, East Arm Little Calumet River, several unnamed tributaries (UNTs) to East Arm Little Calumet River, several UNTs to Brown Ditch, Kintzele Ditch, an UNT to Kintzele Ditch, Trail Creek, and White Ditch.

<sup>19</sup> Route 4 Indiana crossings noted by EPA include: Calumet River, Indiana Harbor Canal, Grand Calumet River, Burns Ditch, Samuelson Ditch, East Arm Little Calumet River, several UNTs to East Arm Little Calumet River, several UNTs to Brown Ditch, Kintzele Ditch, an UNT to Kintzele Ditch, Trail Creek, and White Ditch.

<sup>20</sup> Route 5 Option 1 Indiana crossings noted by EPA include: Calumet River, Indiana Harbor Canal, Grand Calumet River, Burns Ditch, Willow Creek, Salt Creek, Peterson Ditch, East Arm Little Calumet River, several UNTs to East Arm Little Calumet River, several UNTs to Brown Ditch, Kintzele Ditch, an UNT to Kintzele Ditch, Trail Creek, and White Ditch.

<sup>21</sup> Route 5 Option 2 Indiana crossings noted by EPA include: Calumet River, Indiana Harbor Canal, Burns Ditch, Willow Creek, Salt Creek, East Arm Little Calumet River, UNTs to East Arm Little Calumet River, UNTs to Brown Ditch, Kintzele Ditch, UNT to Kintzele Ditch, Trail Creek, and White Ditch.

<sup>22</sup> Route 9 (both Options 1 and 2) crossings noted by EPA include: Little Calumet River, Burns Ditch, Willow Creek, Salt Creek, Peterson Ditch, East Arm Little Calumet River, UNT to East Arm Little Calumet River, UNTs to Brown Ditch, Kintzele Ditch, UNT to Kintzele Ditch, and White Ditch.

**Recommendations:** It is expected that since a new, parallel track is proposed to be constructed adjacent to existing track for portions of the project, and that significant sidings are also proposed to be constructed, existing stream crossings (including both bridges and culverts) would need to be modified, expanded, rebuilt, or newly constructed to accommodate the proposed new siding or parallel track's crossing over each waterway. As such, EPA does not concur that no streams in Michigan will be impacted by project implementation. Additionally, stream impacts for upgraded crossings also appear warranted and expected in both Illinois and Indiana, in addition to Michigan. The following information should be included:

- A correct list of all waterways to be crossed in each state. This should be updated in the Executive Summary and in Chapter 3.
  - Waterway names that use the USGS topographic map blue-line stream names, or refer to a waterway as an unnamed tributary to the closest named blue-line stream.
  - Corrected information noting that stream impacts are required and expected throughout the project ROW in each state.
2. The Draft EIS in several locations states that impacts to streams and waterways are not expected; as an example, page 199 (Chapter 3) states, "*It is not expected that any streams/rivers, lakes/ponds or floodplains would be impacted in Indiana because there are only minor limited infrastructure improvements planned for this segment.*" EPA does not concur with this statement, or any other statement in the Draft EIS that wetlands, streams, lakes, and other waterbodies will not be impacted by implementation of any action alternative.

**Recommendation:** Acknowledge that impacts to streams, rivers, wetlands, and other waterbodies are unavoidable if any action alternative is implemented, as there will be new track(s), sidings, station improvements, and maintenance facilities built that will require impacts in all three states. All references stating that no wetlands, streams, or waterbodies will be impacted (in any state) should be corrected.

3. Section 3.15 in Chapter 3 is supposed to discuss "*water body crossings including perennial and intermittent streams, lakes and ponds as designated on USGS maps and USFWS [U.S. Fish and Wildlife] [National Wetlands Inventory] (NWI) maps for deep water lakes and open water ponds.*" However, no actual discussion of specific impacts to waterbodies (location, type, length, acreage, linear footage, etc.) is provided in this section. Page 196 states, "*The potential impacts on streams, lakes, and ponds were evaluated using GIS tools by quantifying the length and number of stream crossings and/or longitudinal encroachments, and the area and number of lakes and ponds within the Area of Analysis, see Table 3-28.*" However, Table 3-28 is just a summary of the NWI acreage and stream length<sup>23</sup> and provides no substantive or quantified estimates of stream or waterbody impact associated with each proposed route.

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<sup>23</sup> Likely inaccurate, as Draft EIS calculations as noted in the document "*may include both sides of stream thereby inflating the actual stream intersect length.*"

**Recommendation:** FRA and their consultant team should use GIS to intersect the study area width with all streams within the study corridor (not all streams are found in NHD<sup>24</sup> or other GIS datasets) to more accurately determine potential stream impacts associated with each route width at this point. These results should be quantified in a new table. Additional maps should be created that call out each potential stream impact, including approximate length of impact, type of impact (new culvert, culvert extension, stream relocation, combinations therein, etc.), and most importantly, location of impact. This information should all be documented.

4. Section 3.15 in Chapter 3 (page 197) incorrectly discusses high quality water resources in Indiana. Indiana's waters designated for special protection include designated salmonid waters (including Indiana DNR-designated trout streams), outstanding state resource waters, and critical wetlands and critical special aquatic sites. The Indiana Department of Environmental Management (IDEM) has designated all waters (including wetlands) within the INDU as outstanding state resource waters. Please see the enclosure to this letter: "Indiana Waters Designated for Special Protection" for more information. Furthermore, the importance of high quality aquatic resources in each state was not mentioned or discussed in the Draft EIS.

**Recommendations:** Correctly identify trout streams, salmonid streams, outstanding state resource waters, and critical wetlands/aquatic sites, and other Waters Designated for Special Protection within the project footprint in Indiana. High quality aquatic resources in Michigan and Illinois (including, but not limited to, blue ribbon trout streams, salmonid streams, outstanding state resource waters, and critical wetlands/aquatic sites) should also be verified, and specified. The functions and values of these high quality aquatic resources, the ecosystem services they provide, and the potential impacts to these resources should be adequately discussed.

5. The discussion of stream impacts in Michigan, in Section 3.15 in Chapter 3 (page 198) states, *"the Build Alternatives cross multiple rivers, streams and floodplains; however, proposed improvements are not anticipated to impact streams, rivers, or wetlands beyond the temporary impacts during construction"* but then goes on to say, *"Once the specific improvements have been identified and in conjunction with the Tier 2 NEPA analysis, the waterways would be reviewed to determine potential impacts and where it is possible and practical to avoid or minimize impacts. If a project would impact water bodies, stream crossings, floodplains and wetlands, then mitigation measures would be required. If temporary impacts are identified, but they cannot reasonably be avoided, these impacts would be identified and appropriate mitigation steps taken to reduce any increase in the risk of flooding during construction. Specific mitigation measures would be identified in the Tier 2 NEPA analysis."*

While it does not appear that new parallel passenger rail tracks are proposed to be constructed in Michigan as are proposed in the Chicago to SOTL area, Chapter 2 (Table 2-10) indicates that improvements including new train stations, expanded parking facilities, parking structures, sidings, layover tracks, and a new maintenance facility are proposed as

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<sup>24</sup> USGS's National Hydrography Dataset

part of full project build-out. Furthermore, page 68 of Chapter 2 states, "...the Build Alternatives propose to upgrade and connect the existing passing sidings between Niles, Michigan near James Street and Glenwood Road just east of Dowagiac, Michigan. Connecting the passing sidings would essentially double-track the railroad in this 16-mile section and allow it to accommodate additional frequencies at speeds up to 110 mph." EPA assumes that these upgrades will require stream crossings and/or permits for wetland and water resource impacts.

**Recommendation:** Clarify that infrastructure upgrades associated with all aspects of build out (including new stations, sidings, parking areas, maintenance facilities, etc.) may, and likely will, require impacts to regulated water resources.

6. Many waterways proposed to be crossed/impacted by the proposed routes are listed as impaired (i.e., not meeting state water quality standards) on the Michigan Department of Environmental Quality (MDEQ), IDEM, and Illinois Environmental Protection Agency (IEPA) Clean Water Act Section 303(d) lists of impaired waterbodies. While the Draft EIS briefly mentioned the presence of 303(d)-listed waterways, it did not include a discussion of the specific impairments for each waterbody, or the implications to water quality for proposed impacts to 303(d)-listed waterbodies associated with the proposed project.

**Recommendation:** Provide additional information on the current impairments listed for each waterbody (by state), and describe how implementation of each proposed Route could potentially affect each waterbody with regard to specific listed impairments.

7. Portions of the Grand Calumet River in the project vicinity have been identified as a Great Lakes Area of Concern (AOC). The U.S. - Canada Great Lakes Water Quality Agreement (Annex 2 of the 1987 Protocol) defines AOCs as "geographic areas that fail to meet the general or specific objectives of the agreement where such failure has caused or is likely to cause impairment of beneficial use of the area's ability to support aquatic life." Any improvements to existing bridges over the Grand Calumet River, including (but not limited to) the Route 5 bridge over the river, could disturb contaminated sediments and/or remediation areas within the Grand Calumet River and may negatively impact the quality of contaminated or capped sediments, water quality, and fish and wildlife habitat within adjacent and downstream remediated segments of the river.

**Recommendation:** Discuss existing AOCs within each corridor, and discuss the implications of implementation of each Route on that AOC.

## **FLOODPLAINS**

1. The Draft EIS did not provide information on floodplain impacts (acreage, etc.) associated with each action alternative. The only information provided was Table 3-28, in which floodplain acreages in each route were provided. Additionally, no information on specific environmental consequences that could be expected due to project implementation by Route was provided, nor was any discussion of environmental permitting for floodplain impacts

provided. Furthermore, no discussion of floodplain mitigation requirements, or mitigation proposals (by state), was provided.

**Recommendation:** Provide information on specific floodplain impacts (acreage, etc.) broken out by each alternative, including information on specific environmental consequences that could be expected due to project implementation, and a discussion of environmental permitting requirements. The document should also discuss permitting requirements for floodplain impacts, mitigation requirements, and mitigation proposals (or commitments) for floodplain impacts.

#### **THREATENED AND ENDANGERED SPECIES/HIGH QUALITY HABITAT**

1. Page ES-30 in the Threatened and Endangered Species section of the Executive Summary states that, project End-to-End, the construction of the build alternatives “*could have the potential to impact terrestrial and aquatic natural habitats of state and/or federally listed threatened or endangered species, if present in the Area of Analysis.*” However, page ES-30 then states that in Michigan, “*It is not anticipated that any federally listed animal species will be impacted by the Program improvements if avoidance strategies are implemented where species exist adjacent to the railway. The proposed work in Michigan is anticipated to stay within the existing right of way, where currently there is not suitable habitat for the species listed.*” The statement for the Michigan portion contradicts the statement for End-to-End corridor. Furthermore, no documentation was provided in the Draft EIS to confirm that Federally- or State-endangered, rare, or threatened species or their critical habitat are, or are not, present within the project corridors.

**Recommendations:** Clarify that coordination with state and Federal resource agencies will be required under both the Endangered Species Act as well as state laws. While corridors are loosely drawn at this point, the study widths of each proposed Route can be compared to existing Natural Heritage Data and to determine if listed species are present in those areas. This information should be provided.

2. Page 233 (Chapter 3) stated, “*Field surveys and coordination with each state resource agency would take place during Tier 2 NEPA analysis to verify the presence of state listed species. Likewise, the presence or absence of federally listed threatened and endangered species is not known at this time and field surveys and coordination with the USFWS would take place during Tier 2 NEPA analysis.*” From these statements, it does not appear that FRA has undertaken any coordination or other on-site surveys through the Michigan Natural Features Inventory (MNFI), Michigan Department of Natural Resources (MDNR), Indiana DNR, or Illinois DNR to determine if state-listed threatened or endangered species are present within any proposed project areas proposed to be disturbed via project construction. It also does not appear that coordination with USFWS has occurred regarding the potential for impacts to Federally-listed species.

**Recommendations:** EPA recommends that FRA discuss the potential for consultation (including the potential for a Rare Species Review) with MNFI before completing the Tier 1 Final EIS. The Rare Species Review corresponds to the Endangered Species

Assessment previously provided by the Wildlife Division of the MDNR, as MDNR ceased to accept review requests to the Environmental Review (ER) Program after September 16, 2011. These consultations are required to determine if any state-listed endangered or threatened species are present within the project boundaries, and if project implementation would or could detrimentally affect any listed species or their critical habitat. Correspondence sent to and from the MNFI regarding consultation efforts should be included in NEPA documentation. Likewise, consultation should also be undertaken with the Illinois and Indiana DNRs, and correspondence sent to and from the DNRs regarding consultation efforts should be included. It is possible that the build alternatives will detrimentally affect state or Federally- listed species or their critical habitat. As on-site surveys vary by species, and in certain instances must be completed during specific short seasonal timeframes, EPA strongly encourages swift and timely coordination with USFWS, MNFI, and the Illinois and Indiana DNRs as soon as possible. Correspondence to and from the MNFI, state DNRs, and USFWS regarding required consultation efforts should be included in NEPA documentation. Additionally, include information on the requirement for consultation for threatened and endangered species, and information on the status and results of those consultation efforts.

3. Page 240 (Chapter 3) of the Draft EIS notes that there are a number of areas within route corridors that provide potentially suitable habitat for Federally- and state-endangered or threatened species, and that *“species have also been observed along the railroad right of way...”* However, the Draft EIS then stated that, *“there would be little to no anticipated disturbance along the portion of the route that travels through the Indiana Dunes National Lakeshore ...and therefore any listed species are not expected to be impacted.”*

**Recommendation:** As recommended in earlier comments, only through coordination with the Federal and state wildlife resource agencies will FRA know with certainty if listed or candidate species will, or will not, be detrimentally affected by project implementation. Statements that make definitive assertions regarding an expectation of no impacts to listed or candidate species should be modified.

4. The Fish and Wildlife Coordination Act (FWCA) requires that Federal agencies consult with the state wildlife agencies and USFWS concerning the conservation of wildlife resources where the water of any stream or other water body is proposed to be controlled or modified by a Federal agency or any public or private agency operating under a Federal permit. As this project will require modifications, and Federal permits for impacts to waterbodies (and potentially adjacent wetlands), consultation with these agencies is required.

**Recommendations:** Correspondence to and from the state wildlife agencies and USFWS regarding required consultation efforts under the FWCA should be included in future documentation. It should also be updated to include information on the requirement for consultation under the FWCA, and information on the status and results of those consultation efforts.

## **ENVIRONMENTAL JUSTICE**

1. The environmental justice (EJ) analysis in the Draft EIS was inadequate. Multiple communities living with EJ concerns are located along the corridor in all three states. These communities not only have high populations of low-income and/or minorities, but they also experience multiple sources and routes of exposures to pollution and linguistic disparities, including language barriers and low literacy rates. All of these factors contribute to a high likelihood of disproportionately high and adverse impacts as a result of the proposed project.

The Draft EIS used state-wide, county-wide, and city/village-wide low-income, minority, and limited-English proficiency (LEP) data to develop a very coarse EJ analysis. Use of such coarse data is insufficient, particularly when finer-grain data is readily available and routes have been identified. EPA recommended use of Census block level data in our October 18, 2012, comment letter to FRA. While EPA acknowledges that Tier 2 will include design details and more refined data, a more robust and helpful EJ analysis can be completed for the Tier 1 analysis using available information.

The Draft EIS also does not sufficiently review potential impacts to communities. For example, Section 3.6.4.3 equates the adverse noise and vibration impacts of potential high speed rail trains with the existing freight trains that run along Routes 5 and 9; but the proposed high speed rail trains are neither the same type nor run on the same schedule. With the information presented, it is impossible to determine whether this will actually result in a *“minimal change in impacts from noise and vibration.”*<sup>25</sup>

Please note that while job creation is a temporary, beneficial output of any infrastructure project, it should not be included in the “disproportionately high and adverse” determination or counted as mitigation for potential impacts to communities with EJ concerns unless it is as a result of an impact. For example, the determination of a disproportionately high and adverse impact based on increased noise impacts should result in noise-related mitigation.

### **Recommendations:** The EJ analysis should include:

- Analysis based on Census tract level or finer detail (block group), as appropriate and as data allows. For instance, indicating that Cook County is a community with environmental justice concerns is not helpful to the analysis. Further, identifying both counties and city/villages as communities with EJ concerns is redundant. For example, listing both Gary and Lake County as areas with high minority populations is not helpful; using one consistent geographic unit of analysis greatly increases the quality of the EJ analysis.
- Maps of low-income, minority, and LEP populations by the appropriate geographic unit of analysis.
- Details of potential impacts to communities with EJ concerns. EPA acknowledges that the document points to other sections to describe the potential impacts (such as document sections on noise, vibration, and aesthetics); however, this is not specific to

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<sup>25</sup> Page 126: “Route 5 (Options 1 and 2) in Indiana and Route 9 (Options 1 and 2) in both Illinois and Indiana do not follow the existing passenger rail route, rather they follow routes that already carry freight rail traffic. Due to the existing presence of heavy freight traffic, there is expected to be minimal change in noise and vibration effects to neighborhoods along the Corridor.”

the sometimes-unique pathways by which communities with EJ concerns experience impacts. For example, many low-income households, living in older housing stock, will be disproportionately impacted by an increase in noise. EPA also recommends identifying and studying specific, proposed locations of the maintenance yard and the layover area in Detroit. Stating that the maintenance yard will be “*near the east end*” and the layover area will be “*near Detroit New Center Station*” is not helpful; associated impacts of both facilities include increased noise, vibration, and impacts to air quality. Communities with EJ concerns should be actively engaged in the siting and configuration of these facilities.

- A conclusion of whether there will be disproportionately high and adverse impacts to communities with EJ concerns. EPA reminds FRA that identification of a disproportionately high and adverse impact does not preclude an action from going forward, just that heightened attention should be paid to alternatives, mitigation, monitoring, and preferences expressed by the community<sup>26</sup>.
  - Specific mitigation. Pushing mitigation commitments to future documents is not helpful. Because the proposed project is likely impacting a large and diverse set of stakeholders, particularly on the south side of Chicago, in northwest Indiana, and in Detroit, at minimum, outreach commitments should be identified.
  - Acknowledgement of specific known and anticipated community concerns, particularly regarding temporary construction jobs, siting the new station, and mitigation commitments. Noise, vibration, aesthetic, and community character are all areas of potential impact. However, the Draft EIS does not discuss potential construction job creation activities for low-income and minority communities along the corridor. This is a very typical comment from communities living with EJ concerns. EPA recommends a discussion of whether local jobs that will be created will be held for members of the community, rather than sourced from outside the area.
2. The Draft EIS used FTA’s EJ circular as guidance. EPA’s understanding is that the purpose of the circular is to provide guidance on EJ to recipients of FTA monies.

**Recommendation:** Consider whether other guidance is better suited to EJ analysis in this context. EPA has extensive experience in this area and can assist.

## **AIR QUALITY/CONFORMITY ANALYSIS**

1. The Draft EIS notes that existing service delays are primarily attributed to train interference, track quality and signaling that restrict speed, and equipment malfunctions. The Draft EIS did not discuss existing idling or any specific locations of conflict points where trains idle, if they in fact idle for any extended periods of time. Impacts on air quality are discussed in Chapter 3, Section 3.9.4, where the Draft EIS states that trip diversion from other transportation modes to trains is expected to result in reduced emissions in all types of the

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<sup>26</sup> CEQ’s *Environmental Justice Guidance Under the National Environmental Policy Act* (December 10, 1997)

studied pollutants except NO<sub>x</sub><sup>27</sup>, in which an increase is expected due to the use of diesel fuel by trains.

**Recommendations:** Include information on train idling times, including how they are recorded, and determine current idling times, any reduction in idling from implementation of each alternative, and how these factors will affect regional air quality. Implications of reduced idling, but with increased train traffic, should be examined for effects on air quality, particularly related to residents and sensitive receptors such as children.

2. As noted in the Draft EIS, the project area includes the nonattainment/maintenance areas of Chicago, northwest Indiana, and Detroit. Federal actions in nonattainment/maintenance areas must address the General Conformity regulations. The conformity applicability analysis is the first step to determine if the project-related emissions that occur in a non-attainment or maintenance area exceed the de minimis levels (as defined by the General Conformity regulations). FRA's applicability analysis applied the de minimis calculation on an average county basis, not on a nonattainment/maintenance area basis. Page 148 of Chapter 3 of the Draft EIS stated, *"Given that 13 of 14 counties through which the alternative routes would pass are designated either maintenance or non-attainment, the conformity determination was conducted on a state-by-state basis, rather than on a county-by-county basis."*

**Recommendation:** The applicability analysis should be modified to be based on emissions from the project in nonattainment/maintenance areas, and not based on the statewide county average emissions for individual counties. Future documentation for the project should provide detailed projected emissions in the nonattainment/maintenance areas, not an average of the statewide impacts.

## **NOISE/VIBRATION**

1. The Draft EIS broadly categorized expected increases in noise by route, with several sections of proposed build alternatives expected to result in "moderate" or "severe" impacts. Chapter 3 (p.132) of the Draft EIS stated that *"areas identified with moderate or severe noise impacts or vibration impacts would be further evaluated for noise and vibration analysis and for ...potential mitigation measures during the Tier 2 NEPA analysis."*

**Recommendation:** Describe the processes and procedures to be undertaken for analysis of both noise and vibration between now and the publication of future NEPA documents. Terms such as "moderate" and "severe" should be defined for consistent use and public understanding.

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<sup>27</sup> Nitrogen oxide (NO<sub>x</sub>) emissions are of concern primarily because of their role as precursors in the formation of O<sub>3</sub> (ozone) and PM (particulate matter).

## **PUBLIC SAFETY/PUBLIC HEALTH**

1. Table 3-11 in Section 3.7 (Chapter 3) lists the number of existing at-grade and grade-separated rail crossings by state. A table of proposed at-grade and grade-separated roadway crossings was not provided in the Draft EIS. Without a comparison of the existing conditions to proposed conditions, EPA is unable to determine if specific routes culminate in a reduction of at-grade crossings. Furthermore, location maps for existing and proposed at-grade and grade-separated rail crossings were not provided in the Draft EIS. In order to better analyze the public safety and public health impacts, detailed information on the location of these crossings will need to be identified. Crossings, particularly at-grade crossings, in highly-populated areas may increase the risk to human health and safety and have a negative impact on emergency response. As such, additional mechanisms to ensure public safety may be required.

**Recommendations:** EPA supports and encourages the use of grade-separated crossings, where possible and feasible. EPA requests summary tables of both existing and proposed at-grade and grade-separated rail crossings by state. A narrative discussion of the implications of each alternative, with regard to new or modified at-grade or grade-separated crossings, should be included. New and modified crossings should be discussed in the context of their location (urban, rural, etc.) and the implications to human health and safety and emergency response. Future analyses should also include the locations of any hospitals, fire stations, and emergency services in close proximity to rail crossings.

## **PERMITS**

1. While Section 3.25 (Permits) in Chapter 3 references Coastal Zone Acts in each state, the requirement for Coastal Zone Consistency Determinations was not referenced.

**Recommendation:** Provide additional information on each state's requirement for a Coastal Zone Consistency Determination, including the agency(ies) with which such coordination must occur, and information on the process to be undertaken in each state.

## **OTHER ISSUES**

1. The project's length and complexity mean that reviewing paper maps can be difficult.

**Recommendation:** EPA recommends that FRA provide an interactive GIS map through ESRI. An example of an ESRI geoplatform map for a recent linear project can be found on the project website for the proposed US 51 (Pana to Centralia) upgrades in southern Illinois.<sup>28</sup> Providing an interactive GIS map with project study corridors would facilitate both public and agency review of the project alternatives.

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<sup>28</sup> Interactive map:

<http://www.arcgis.com/home/webmap/viewer.html?webmap=6667360907734152927a12102069183c&extent=-89.8893,38.5337,-88.1163,39.3688> (shortened URL: <http://tinyurl.com/p4kkdum>)

2. Gary, Indiana, was recently (2014) selected as one of several cities to participate in the “Strong Cities Strong Communities” (SC2) Federal initiative. The objective of the SC2 initiative is to generate innovative ideas, strategies, and perspectives that cities can use to advance economic development planning in their city and region. Along with the SC2 efforts, other local entities, including universities, state and city governments, are investing resources into the area.

**Recommendation:** Address the SC2 initiatives being undertaken in Gary, and how implementation of the project could interact and/or affect these other efforts.



## **Enclosure: Indiana Waters Designated for Special Protection**

### **Designated Salmonid Waters:**

**[327 IAC 2-1.5-5(a)(3)]**

- Trail Creek and its tributaries downstream to Lake Michigan, LaPorte County
- East Branch of the Little Calumet River and its tributaries downstream to Lake Michigan via Burns Ditch, Porter and LaPorte Counties
- Salt Creek above (upstream of) its confluence with the Little Calumet River, Porter County
- Kintzele Ditch (Black Ditch) from Beverly Drive downstream to Lake Michigan, Porter County
- The Galena River and its tributaries, LaPorte County
- The St. Joseph River and its tributaries in St. Joseph County from the Twin Branch Dam in Mishawaka downstream to the Indiana/Michigan state line, St. Joseph County
- The Indiana portion of the open waters of Lake Michigan
- Those waters designated by the Indiana Department of Natural Resources (IDNR) for put-and-take trout fishing<sup>1</sup>

### **Waterbodies which have been designated all or partially as Outstanding State Resource Waters:**

**[327 IAC 2-1-2(3) and 327 IAC 2-1.5-19(b)]**

- The Blue River in Washington, Crawford, and Harrison Counties, from river mile 57.0 to river mile 11.5
- The North Fork of Wildcat Creek in Carroll and Tippecanoe Counties, from river mile 43.11 to river mile 4.82
- The South Fork of Wildcat Creek in Tippecanoe County, from river mile 10.21 to river mile 0.00
- Cedar Creek in Allen and DeKalb counties, from river mile 13.7 to its confluence with the St. Joseph River
- The Indiana portion of the open waters of Lake Michigan
- All waters incorporated in the Indiana Dunes National Lakeshore

### **Waterbodies which have been designated all or partially as Exceptional Use Streams<sup>2</sup>:**

**[listed in: 327 IAC 2-1-11(b) and IC 13-11-2-72.5 (before its repeal)]**

- Big Pine Creek in Warren County downstream of the State Road 55 bridge near the town of Pine Village to its confluence with the Wabash River
- Mud Pine Creek in Warren County from the bridge on the County Road between Brisco and Rainsville to its confluence with Big Pine Creek
- Fall Creek in Warren County from the old C.R. 119 bridge in the NW quarter of Section 21, Township 22N, Range 8W downstream to its confluence with Big Pine Creek

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<sup>1</sup> Available on the internet at: [http://www.in.gov/dnr/fishwild/files/fw-trout\\_locations.pdf](http://www.in.gov/dnr/fishwild/files/fw-trout_locations.pdf)

<sup>2</sup> As per IC 13-18-3-2(u): "Each exceptional use water (as defined in IC 13-11-2-72.5, before its repeal) designated by the board before June 1, 2009, becomes an outstanding state resource water on June 1, 2009, by operation of law."

- Indian Creek in Montgomery County from the County Road 650 West bridge downstream to its confluence with Sugar Creek
- Clifty Creek in Montgomery County within the boundaries of Pine Hills Nature Preserve
- Bear Creek in Fountain County from the bridge on County Road 450 North to its confluence with the Wabash River
- Rattlesnake Creek in Fountain County from the bridge on County Road 450 North to its confluence with Bear Creek
- The small tributary to Bear Creek in Fountain County within the Portland Arch Nature Preserve which enters Bear Creek at the sharpest bend and has formed the small natural bridge called Portland Arch
- Blue River from the confluence of the West and Middle Forks of the Blue River in Washington County downstream to its confluence with the Ohio River
- The South Fork of Blue River in Washington County from the Horner's Chapel Road bridge downstream to its confluence with Blue River.
- Lost River and all surface and underground tributaries upstream from the Orangeville Rise (T2N, R1W, Section 6) and the Rise of Lost River (T2N, R1W, Section 7) and the mainstem of the Lost River from the Orangeville Rise downstream to its confluence with the East Fork of White River

## Enclosure: Indiana Critical Wetlands and Critical Special Aquatic Sites

In the interest of maintaining consistency with the State Regulated Wetland program established at 327 IAC 17, IDEM defines Critical Wetlands and Critical Special Aquatic Sites to be synonymous with Rare and Ecologically Important Wetland Types under 327 IAC 17-1-3(3)(B):

- **Acid bog:** Acid bog is an acidic wetland of kettle holes in glacial terrain. Bogs can be graminoid (*Carex* spp. and *Sphagnum* spp.) or low shrub (*Chamaedaphne calyculata* and *Betula pumila*). The graminoid bog can be a floating, quaking mat. The soils in acid bogs are saturated and acidic peat. Bogs have non-flowing or very slow flowing water. The water level fluctuates seasonally. When a sphagnum mat floats, it rises and falls with the water table. Acid bogs can be found in northern Indiana.
- **Acid seep:** Acid seep is a bog-like wetland typically found in unglaciated hill regions. This community is a small groundwater-fed wetland located primarily in upland terrain. A thin layer of muck may lie over a mineral substrate. The soil reaction is acid. This seep community is characterized by flowing water during at least part of the year. Acid seeps are located primarily in southern Indiana.
- **Circumneutral bog:** Circumneutral bog is a bog-like wetland that receives groundwater. Circumneutral bogs can be a mosaic of tall shrub bog, graminoid bog, and other communities. The graminoid bog often occurs on a quaking or floating mat. Although a few bogs occur in unglaciated regions, most are found in glacial ice-block depressions. The soils in circumneutral bogs are usually peat, or other low nutrient organic substrates, which are saturated and circumneutral to slightly acid. Circumneutral bogs have non-flowing or very slow flowing water. The water level fluctuates seasonally. Circumneutral bogs are usually found in northern Indiana.
- **Circumneutral seep:** The circumneutral seep (or seep-spring) is a groundwater-fed wetland on organic soil. It is primarily herbaceous. Species typically include marsh marigold (*Caltha palustris*) and skunk cabbage (*Symplocarpus foetidus*) with a scattered tree canopy. Circumneutral seep is typically situated on or near the base of a slope. The soil is typically circumneutral muck. This seep community is characterized by slowly flowing water during at least part of the year. Circumneutral seeps can be found scattered throughout Indiana.
- **Cypress swamp:** Bald cypress swamps are seasonally to permanently inundated wetlands found in depressions and sloughs of large bottomlands associated with the Wabash/Ohio River system. Poorly to very poorly drained soils characterize this environment. Bald cypress (*Taxodium distichum*) is present, and green ash (*Fraxinus pennsylvanica*), silver maple (*Acer saccharinum*), and overcup oak (*Quercus lyrata*) are also usually present. This community is restricted to extreme southwest Indiana.
- **Dune and swale:** Dune and swale is an ecological system consisting of a mixture of upland (black oak sand savanna, dry to mesic sand prairie) and wetland (pond, panne, sedge meadow, marsh, wet prairie) natural communities. These communities occur in long, narrow, linear complexes, with the dry communities occupying sand ridges, and the wet communities occurring in the intervening swales. Black oak (*Quercus velutina*), paper birch (*Betula*

papyrifera), jack pine (*Pinus banksiana*), and prairie vegetation typically occur on the ridges, and sedges, reeds, and marsh/aquatic vegetation line are found in the swales. Water levels are directly influenced by ground water, with the interdunal swales controlled largely by lateral flow through porous beach ridges. Dune and swale is restricted to extreme northwest Indiana, near Lake Michigan.

- **Fen:** Fen is a calcareous, groundwater-fed wetland. Fens are often a mosaic of grassy areas, sedgy areas, graminoid-shrubby cinquefoil, and tall shrub areas. The extent of the tall shrub component of fens may be determined by fire frequency and/or soil moisture. Drying of the soil increases the growth of shrubs. Fens typically occur in the vicinity of glacial moraines. Fens typically have a muck or peat substrate. The water level fluctuates seasonally and is fed by groundwater. Fens can be found in central and northern Indiana.
- **Forested fen:** Forested fen is a tree-dominated wetland on organic soil which receives groundwater. Forested fens are often a mosaic of treed areas, tall shrub areas, and herbaceous areas. A tall shrub layer is often well developed in forested fens. Indicative species typically include tamarack (*Larix laricina*), black ash (*Fraxinus nigra*), yellow birch (*Betula alleghaniensis*), poison sumac (*Toxicodendron vernix*), and red maple (*Acer rubrum*). Forested fens occur in wet lowlands, where moraines meet outwash features or depressions. Forested fens have saturated; poorly to very poorly drained soils that are often muck, but some seasonal flooding can occur in forested fens that are especially level. This community is a late successional stage of fen or circumneutral bog. Forested fens occur in northern Indiana.
- **Forested swamp:** Forested swamp is a seasonally inundated to intermittently exposed wetland of large river bottoms. Forested swamps do not receive direct flow from river flooding except under exceptional circumstances. Forested swamps occur in depressions, sloughs and large bottomlands, typically dominated by tree species such as swamp cottonwood (*Populus heterophylla*), green ash (*Fraxinus pennsylvanica*), and swamp white oak (*Quercus bicolor*). In northern Indiana important tree species include black ash (*Fraxinus nigra*), yellow birch (*Betula alleghaniensis*), and red maple (*Acer rubrum*). Poorly to very poorly drained and aerated soils characterize the swamp environment. Soils usually are mineral not muck or peat. This community type is found throughout Indiana.
- **Marl beach:** Marl beach is a fen-like community located on the marly muck shorelines of lakes. Marl precipitate is evident. A thin layer of water is present in spring, but dries down in summer. Draw-down of a lake creates additional area for this community to develop on. Marl beaches can be found in extreme northern Indiana, primarily in the northeast.
- **Muck flat:** Muck flat is a shoreline and lake community possessing a unique flora of sedges and annual plants, many of which are also found on the Atlantic and Gulf Coastal Plains. This community is found at the margins of lakes or covering shallow basins. This community has a peat substrate. The muck flats can float on the water surface, but during high water periods are usually inundated. The water level of a basin fluctuates during a season or from year to year in response to the amount of precipitation. This exposes bare substrate needed for germination by species of the community. Muck flats are found in northern Indiana.

- **Panne:** Panne is a groundwater fed herbaceous wetland occupying interdunal swales near Lake Michigan. Pannes are located on the lee side of the first or second line of dunes from the lakeshore. The soil is wet, calcareous sand. Pannes are located in counties bordering Lake Michigan.
- **Sand flat:** Sand flat is a shoreline and lake community possessing a unique flora of sedges and annual plants, many of which are also found on the Atlantic and Gulf Coastal Plains. This community is found at the margins of lakes or covering shallow basins. This community has a sand substrate. During high water periods sand flats at the margins of lakes or ponds are inundated. The water level of a basin fluctuates during a season or from year to year in response to the amount of precipitation. This exposes bare substrate needed for germination by species of the community. Sand flats occur in northern Indiana, and in the Plainville Sand Section of southwest Indiana.
- **Sedge meadow:** Sedge meadow is an herbaceous wetland typically dominated by graminoid species such as flat sedge (*Cyperus* spp.), spike rush (*Eleocharis* spp.), rushes (*Juncus* spp.) and sedges (*Carex* spp.). Sedge meadow is an herbaceous wetland of stream margins and river floodplains, and lake margins or upland depressions. Streamside sedge meadows are frequently flooded in the spring and early summer. Sedge meadows of lake margins and depressions often contain standing water during wet months and after heavy rains; during dry periods, the water level is at or just below the substrate. Sedge meadow usually occupies the ground between a marsh and the uplands, or a shrub swamp or wet forest. Periodic high water can kill trees and shrubs invading sedge meadows. Sedge meadows can be found in the northern half of the state.
- **Shrub swamp:** Shrub swamp is a shrub-dominated wetland that is seasonally inundated to intermittently exposed. This community occurs in depressions and the substrate is either mineral soils or muck, as opposed to peat which is characteristic of bogs. Shrub swamp is characterized by non-flowing or very slowly flowing water with levels that fluctuate seasonally. Shrub swamps are persistent, though considered successional. Two opportunistic native shrubs, sandbar willow (*Salix exigua*) and gray dogwood (*Cornus racemosa*), by themselves, are not indicative of shrub swamps. This community type is found throughout Indiana.
- **Sinkhole pond:** Sinkhole ponds are water-containing depressions in karst topography. Sinkhole ponds are found in the Mitchell Karst Plain in south-central Indiana.
- **Sinkhole swamp:** Sinkhole swamps are depressions in karst topography dominated by tree or shrub species. Sinkhole swamps are found in the Mitchell Karst Plain in southcentral Indiana.
- **Wet floodplain forest:** Wet floodplain forest is a broadleaf deciduous forest of river floodplains. Wet floodplain forests occur in depressions and flats on narrow to wide floodplains and also on recently exposed substrates that are frequently flooded. Wet floodplain forests are frequently flooded and may have standing water seasonally to permanently present. Wet floodplain forests occur statewide.
- **Wet prairie:** Wet prairie is an herbaceous wetland typically dominated by graminoid species such as prairie cordgrass (*Spartina pectinata*), bluejoint (*Calamagrostis canadensis*), and

sedges (*Carex* spp.). Vegetation height is often 2-3m. The species diversity of wet prairies is lower than that of mesic prairies. Wet prairies occur in deep swales and the substrate ranges from very deep black mineral soils (which are high in organic matter) to muck. Flooding in spring lasts for several weeks prior to drainage. Wet prairies commonly occur in the Grand Prairie Natural Region, the Tipton Till Plain and the Bluffton Till Plain, with a few examples found in the Northern Lakes Natural Region.

- **Wet sand prairie:** Wet sand prairie is an herbaceous wetland typically dominated by graminoid species such as prairie cordgrass (*Spartina pectinata*), bluejoint (*Calamagrostis canadensis*), and sedges (*Carex* spp.). Vegetation height is often 2-3m. The species diversity of wet prairies is lower than that of mesic prairies. Wet lowland prairies occur in deep swales and the substrate is sand, sometimes mixed with muck. Flooding is a regular springtime occurrence in wet sand prairie and may last several weeks. This community occurs in a mosaic with marsh and other wetlands, and with upland prairies and sand savannas. Fire was frequent occurrence, but more common in the fall when waters had receded. This community occurs in northwest Indiana and in the Plainsville Sands area